

## Energy drinks and obesity: Preliminary results from a preclinical study

To the Editor,

We read with great interest the paper titled “Long-term consumption of energy drinks (EDs) induces biochemical and ultrastructural alterations in the heart muscle” by Munteanu et al. (1) and found it of importance with a view to clinically prevent the related disorders among young people. Authors investigated the effects of long-term consumption of Red Bull® and its combination with alcohol on certain biochemical parameters and the ultrastructure of the myocardium. They concluded that athletes and active persons should avoid a long-term consumption of the Red Bull ED and, particularly, its combination with alcohol.

Regarding the findings reported in the paper, we would like to make the following contribution to the discussion. Recently, we reported three cases of atrial fibrillation in young people after ingestion of a commercial ED (2). To rule out a possible caffeine-related side effect, we performed a preclinical study. Forty Sprague-Dawley rats were divided in four groups, and they were administered beverages containing different concentrations of caffeine: a commercial ED, a commercial cola soda, regular sweetened coffee, and water (control group). Preliminary results showed that animals administered ED and cola soda quickly gained body weight (+12%:  $p < 0.01$  and +5.2%:  $p < 0.01$ , respectively) compared with those administered sweetened coffee and control group. Thus, weight gain was not related to caffeine because it was not observed in the group in whom coffee was administered. We also reported a preliminary observation of increased fibrosis at the level of atrial myocardium. The body weight gain reported in the ED group seems to be related to the composition of EDs that contain several different substances. Currently, there is no fixed formula or ingredient that defines EDs. However, various substances, such as methylxanthines, often present in high quantities give the beverage certain characteristics (such as making it a psychostimulant) (3-6). EDs contain substances such as caffeine, vitamin B, taurine, maltodextrin, inositol, carnitine, creatine, and glucuronolactone; furthermore, they contain plants and herbs such as guarana (containing caffeine), ginseng, and ginkgo biloba. The presence of herbs in EDs

could also induce some side effects. It is well known that herbs interact strongly with medications and exert direct effects on cardiovascular and hemostatic systems. In addition, the sugar present in EDs available in cans can cause an increase in body weight.

We believe that larger clinical trials evaluating the effects of EDs on obesity and on cerebral and cardiovascular systems are warranted.

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